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MEMORANDUM FOR: Deputy Director for Administration

VIA: Information Handling Systems Architect

FROM: Director of Training and Education

SUBJECT: Training Requirements for IHS

REFERENCE: Memorandum to Director of Training and Education
from Deputy Director for Administration, dated
10 April 1981, Same Subject (DD/A 81-0689)

I. Introduction and Methodology

This report is in response to the requirement outlined in the referenced memorandum. The need to determine the totality of training requirements of the wide variety of information handling systems now in use or scheduled for implementation in the next few years is essential. Actually defining those requirements, however, is a difficult and complex task. Therefore, it is our hope that the effort represented by this response is the first step in a continuing and active study and dialogue between the Office of the Systems Architect, the Office of Data Processing (ODP), the Office of Training and Education (OTE), and the project officers in each directorate responsible for major information handling systems. It is our view that only in that way can training requirements, and how best to meet them, be defined in sufficient detail and accuracy to plan and commit necessary resources.

To gather the data required to respond to your memorandum, representatives of OTE met with each Directorate ADP Control Officer and, in the case of the Administration Directorate (AD), met with each Office ADP Control Officer. These meetings were on an action-officer-to-action-officer basis and free from bureaucratic channels. The component officials were told that the data would probably be aggregated, save in the instance of large systems, and would be treated as a best approximation.

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II. Training Requirements

The accuracy of the data collected varied from component to component depending to a large extent on the stage of development of the appropriate system and the degree to which training is considered as an essential factor in successful operation of that system. The basic data are presented in Chart I - Training Requirements which is included as Attachment A.

The values presented in this chart are new training requirements for each of the appropriate fiscal years. These values represent four classes of people: those who are occupying newly created positions, personnel rotated into an existing position requiring training, personnel who are out-of-date in their level of information and need retraining, and personnel who need training because a new system has been implemented.

Definitions used for the categories of personnel on Chart I are as follows:

- Project Manager is someone involved in the management of either acquiring or building an information handling system.
- Project Builder is someone who works in the construction of an information handling system. This is usually systems analysis, design, coding, and validation.
- Client Manager is someone who manages the employees who use the system or who use the information coming from it.
- Client User is someone who obtains information from a system or puts information into a system.
- Client Transfusion is an instance when a client user has received informal training in the work environment sufficient for him/her to interact minimally with an information handling system.
- Operations/Maintenance Manager is someone who supervises the operation and maintenance of the equipment and software which constitutes the information handling system.
- Operations/Maintenance Worker is someone who operates ADP-related machines and maintains associated software.

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Several items on this chart need further amplification:

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- SAFE training is scheduled to begin in FY-83 and skills training for 690 analysts is included in the client user figure for that year.
- Training for the CRAFT system is not a significant factor in the numbers reported in this chart. The number expected to be trained in the "client user" category is approximately 250 per year.
- CAMS training, which is ongoing now at the rate of approximately 150 per year in the client user category, increases to approximately 450 in FY-84 with the introduction of CAMS II.
- Training for the MERCURY system is not reflected in this chart because training is not expected to start until after FY-85.
- There is a slight cyclical nature to the data which is caused by job attrition and skills updating factors which recur in a three-year cycle.

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III. Instructor Staffing Requirements

Instructor staffing requirements shown in Chart II were derived from the training requirements. For all types of training, the total number of students was divided by assumed class sizes of 15 students per skills class, 25 students per information science class, and 35 students per systems development technology class. Class durations were assumed to be 2 weeks for skills, 1 week for information science, and 3 weeks for systems development technology, assuming an instructor availability of 18 weeks per year yielded the instructor staffing requirements. Each of these was multiplied by the number of instructors desirable for each class. This was assumed to be 2 for skills, 1 for information science, and 1 for systems development technology. The staffing requirements were aggregated into these areas:

- Skills training, which teaches a client user the specific skills needed to enter data into and recover data from an information handling (IH) system.
- Information science training, which teaches project managers, client managers, and system designers how to manipulate information from and information requirements for IH systems.
- Systems development technology training involves the techniques necessary to design and program the software and to operate the hardware of a system. Project builders and operations/maintenance personnel are the main students.

Some observations about chart II are the following:

- The estimates of instructor requirements shown are based on the assumption that all the instruction is done on a centralized basis. This assumption is valid for the categories of information science and system development technology which are heavily academically-oriented courses, and those courses of this type being taught now are conducted centrally. The assumption may not be appropriate for skills training. Currently, a considerable amount of skills training is done on a decentralized basis in the components.
- The obvious major requirement for training and instructors is in the skills area.

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- The requirement for three-four instructors for "Information Science" training is small enough to be manageable, but does represent an additional requirement because the training now done in this category by the Information Science Center is open to the entire Intelligence Community.
- The two-three instructors for "System Development Technology" training also represent a new requirement.

Since the "Skills" training requirement has by far the major impact, some additional discussion of it seems warranted. Data were collected from the various offices about their respective estimates of training instructor requirements. Respondents were asked to list their estimates of instructional personnel needed in four categories for each fiscal year. The responses are summarized in Chart III - User Estimates of Instructor Requirements for Skills Training. Whereas Chart II presents the requirements if all training were accomplished on a centralized basis, Chart III is at the other end of the spectrum and represents basically a decentralized approach to skills training. The data in Chart III includes, we are sure, part-time instructors who could be spending as little as one-fourth or less of their time on instructional duties. The data also includes, we suspect, instructors who teach a class of one or two students only occasionally during a given year. We suspect that the actual number of instructors required for skills training is somewhere in between these two extremes, but we do not know how to get at it from the data gathered so far. If our experience to date with CAMS training and the pattern we see developing for SAFE training are reasonable models for skills training for major systems, then we can expect some initial skills training to be conducted by the contractor, continuing training for new users to be done best on a centralized basis by OTE, and specialized training unique to a given office to be done best within the component.

IV. Preliminary Conclusions

Our effort to date suggests the following:

- There is a significant requirement for word processing skills training. The data suggest FY-82, but it is probably already with us. The training is being done by individual offices now primarily using contractors and transfusion. The magnitude of the requirement suggests that it can probably be done more efficiently on a centralized basis if a single item of equipment is involved.

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- Skills training in general seems to be, by far, the major requirement in the time period FY-82 to FY-85.
- Training requirements are not well defined for many systems. The users feel relatively comfortable when talking about contractor or component-conducted training but, as should be expected, feel uneasy about estimating the amount of training for their system that should be conducted by OTE or ODP.

V. Summary

As stated in our opening paragraph, we view this effort as just the beginning. Most major systems which will have major impact on training requirements in the time period of this report will probably have some combination of contractor, component, and centralized OTE or ODP training. The only way these requirements can be defined is by close coordination with the offices concerned. Such coordination is well under way with such systems as SAFE and CAMS. With an obvious, immediate requirement such as word processing training, it is not. Hopefully, the process set in motion by this initial effort will stimulate a coordinated effort to address it and other systems where it is appropriate to do so.

Attachments:
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